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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/870,836	06/06/97	HAMPAPUR	A VIRAGE.007A

LM02/0428  
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EXAMINER

RAO, A

ART UNIT

PAPER NUMBER

2713

DATE MAILED:

04/28/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**08/870,386**

Applicant(s)  
**Hamapapur et al.**

Examiner  
**Anand Rao**

Group Art Unit  
**2713**



☐ Responsive to communication(s) filed on \_\_\_\_\_.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-22 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-22 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Drawings***

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### ***Specification***

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al., (hereinafter referred to as "Zhang").

Zhang discloses a computerized method (Zhang: column 4, lines 45-55) of extracting a key frame (Zhang: column 3, lines 1-7) from a video comprising the steps of: providing a

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reference frame (Zhang: column 5, lines 18-20); providing a current frame different from the reference frame (Zhang: column 5, lines 21-23); determining a chromatic difference measure between the reference and current frame (Zhang: column 4, lines 1-20; column 3, lines 20-25: pair wise pixel comparison as represented by the pixel color component histograms); determining a structural difference measure between the reference and current frame (Zhang: column 7, lines 30-40 and 42-51: determining “temporal variation of video content” in terms of image features); and identifying a current frame as a key if the chromatic difference measure exceeds a first threshold and the structural difference measure exceeds a second threshold (Zhang: column 6, lines 20-65: as implemented in a ‘multi-pass’ analysis), as in claim 1.

Zhang discloses a computerized method (Zhang: column 4, lines 45-55) of extracting a key frame (Zhang: column 3, lines 1-7) from a video comprising the steps of: providing a reference frame (Zhang: column 5, lines 18-20); providing a current frame different from the reference frame (Zhang: column 5, lines 21-23); determining a first difference measure between the reference and current frame (Zhang: column 4, lines 1-20; column 3, lines 20-25: pair wise pixel comparison as represented by the pixel color component histograms); determining a second difference measure between the reference and current frame (Zhang: column 7, lines 30-40 and 42-51: determining “temporal variation of video content” in terms of image features); and identifying a current frame as a key if the first difference measure exceeds a first threshold and the second difference measure exceeds a second threshold (Zhang: column 6, lines 20-65: as implemented in a ‘multi-pass’ analysis), as in claim 8.

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Regarding claims 2 and 9, Zhang discloses setting the current frame as a reference frame if a key frame is identified (Zhang: column 7, lines 44-45) as in the claims.

Regarding claims 3 and 10, Zhang discloses repeating the steps for a new current frame until the end of the video is reached (Zhang: column 7, lines 48-50), as specified.

Regarding claims 4 and 11, Zhang discloses selecting the new current frame at a predetermined time interval after the current frame (Zhang: column 6, lines 5-10), as specified.

Regarding claims 5 and 12, Zhang discloses that the predetermined time interval is user selectable (Zhang: column 6, lines 36-45), as in the claims.

Regarding claims 6 and 13, Zhang discloses that both the first and second thresholds are user selectable (Zhang: column 7, lines 1-29), as in the claims.

Regarding claims 7 and 14, Zhang discloses that the second difference measure is only performed if the first difference measure exceeds the first threshold (Zhang: column 6, lines 30-40), as in the claims.

Regarding claims 15-16, Zhang discloses that the second difference measure is more computationally intensive and extracts more information than the first difference measure (Zhang: column 7, lines 1-60), as in the claims.

Regarding claim 17, Zhang discloses using a third difference measure (Zhang: column 3, lines 45-68), as in the claim.

Zhang discloses a computerized method (Zhang: column 4, lines 45-55) of extracting a key frame (Zhang: column 3, lines 1-7) from a video comprising the steps of: providing a

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reference frame (Zhang: column 5, lines 18-20); providing a current frame different from the reference frame (Zhang: column 5, lines 21-23); determining a structure difference measure between the reference and current frame (Zhang: column 7, lines 30-40 and 42-51: determining “temporal variation of video content” in terms of image features); and identifying a current frame as a key if the chromatic difference measure exceeds a first threshold and the structural difference measure exceeds a second threshold (Zhang: column 6, lines 20-65: as implemented in a ‘multi-pass’ analysis), as in claim 18.

Regarding claim 19, Zhang discloses setting the current frame as a reference frame if a key frame is identified (Zhang: column 7, lines 44-45) as in the claim.

Regarding claim 20, Zhang discloses repeating the steps for a new current frame until the end of the video is reached (Zhang: column 7, lines 48-50), as specified.

Regarding claim 21, Zhang discloses selecting the new current frame at a predetermined time interval after the current frame (Zhang: column 6, lines 5-10), as specified.

Regarding claim 22, Zhang discloses that both the threshold is user selectable (Zhang: column 7, lines 1-29), as in the claim.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maudlin discloses a system and method for skimming digital audio/video data. Jain discloses a machine synthesis of a virtual video camera/image of a scene of multiple video

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cameras/images of the scene. Zabih discloses an apparatus and process for detecting scene breaks in a sequence of video frames. Youden discloses video on demand system with a multiple data sources configured to provide VCR-like services.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand S. Rao whose telephone number is (703)-305-4813 .

asr

April 22, 1999

**ANAND S. RAO**  
**PATENT EXAMINER**

